

- Drafts
 - BRS: tool
- Pending
- Active
 - L1: (8) "4665607"
 - L2: (333255) laser\$1
 - L3: (4) 1 and 2
 - L4: (136) 72/4.ccls.
 - L5: (78814) 72/\$.ccls.
 - L6: (623) 2 and 5
 - L7: (73) arai takeji.in
- Failed
 - (0) tool near2 (machine or head or spindle\$1)
 - (0) (two or dual) near3 (spindle\$1 or driver\$1 or chuck\$1)
- Saved
- Favorites

U	I	Document ID	Issue Date	Pages	Title	Current OR	Current XRef
1	<input checked="" type="checkbox"/>	WO 9009863 A1	19900907	15	METHOD OF WELDING MOTOR STATOR	219/121.64	;
2	<input checked="" type="checkbox"/>	EP 454861 A1	19911106	6	LASER WELDING METHOD FOR ZINC-PLATED STEEL SHEET.		
3	<input checked="" type="checkbox"/>	JP 55146265 A	19801114		METHOD OF ADJUSTING FUEL INJECTION PUMP	123/459	;
4	<input checked="" type="checkbox"/>	JP 63098160 A	19880428		LASER	372/61	;
5	<input checked="" type="checkbox"/>	JP 63098161 A	19880428		LASER	372/109	;
6	<input checked="" type="checkbox"/>	JP 63098165 A	19880428		LASER	372/55	;
7	<input checked="" type="checkbox"/>	JP 63098166 A	19880428		LASER	372/92	;
8		JP 63273585 A	19881110		POWER CONTROL SYSTEM FOR CNC		

Start

Inbox - Micro...

WordPerfect...

WordPerfect

WP Print Pro...

USPTO Inter...

EAST - Id

8:55 PM

Document	I	Issue	Pa	Title	Current	Current	Inventor
1	US 5920973	19990717		Hole forming system with multiple spindl	29/26A	408/43	Kosmowski,
2	US 5640752	19970636		Controlled adjustable manufacturing meth	29/596	29/564.	Steiner, R
3	US 4752352	19880621		Apparatus and method for forming an inte	216/33	156/154	Feygin, Mi
4	US 3766815	19731010		APPARATUS FOR FORMING STRIP	83/160	29/24.5	Edixhoven,
5	US 6104598	20000806		Free form capacitor	361/30	29/25.4	Duva, Fran
6	US 5870120	19990214		Ink jet head base body, ink jet head usi	347/56	29/513	Terai, Har
7	US 5845379	19981217		Method for making a supporting crossbar	29/6.1	29/897.	Steffensen
8	US 5604971	19970235		manufacturing method for variable lamina	29/596	29/598	Steiner, R
9	US 5559543	19960927		Method of making uniformly printing ink	347/62	216/16	Komuro, Hi
10	US 5479980	19960112		Method and device for forming drilled ne	163/5	163/1	Spingler,
11	US 5384945	19950112		Device for forming drilled needle blanks	29/33R	163/1	Spingler,
12	US 5351377	19941008		Workstock forming apparatus and method	29/38C	29/563	Gates, Jer
13	US 5271140	19931241		Index-feed machining system	29/33K	29/33Q	Futamura,
14	US 5205036	19930409		Method of manufacturing a semiconductor	29/856	29/827	Yamazaki,
15	US 5050650	19910922		Axial lead electrical component feeder	140/10	29/566.	Holcomb, G
16	US 4934035	19900615		Method for producing friction bearing pa	29/898	29/898.	Aubele, Ed
17	US 4932116	19900615		Machine for producing friction bearing p	29/564	29/558	Aubele, Ed
18	US 4869865	19890912		Method of manufacturing nuclear fuel bun	376/26	29/430	White, Dav
19	US RE32830	19890117		Method of forming a precision ball track	29/898	29/558	Hazebrook,
20	US 4679295	19870708		Modular machine tool for series machinin	29/564	226/120	Lopez, Ang
21	US 4672729	19870610		Method for machining clutch gear for aut	29/893	72/332	Hoguchi, T
22	US 4655652	19870420		Method of multiple station drilling	409/13	29/26A	Schissler,
23	US 4611373	19860907		Method of forming a precision ball track	29/898	29/558	Hazebrook,
24	US 4551912	19851117		Highly integrated universal tape bonding	29/827	228/170	Marks, Rob
25	US 4454645	19840620		Multiple station drilling apparatus	29/563	29/564	Schissler,
26	US 4378631	19830406		Method of fabricating a charge plate for	29/825	29/592.	Head, Dona

COORDINATION OF ROBOT AND CONVEYOR

[76] Inventor: Paul S. Martin, 189-54 43rd Road,
Flushing, N.Y. 11358

[22] Filed: June 9, 1975

[21] Appl. No.: 585,107

Related U.S. Application Data

[63] Continuation of Ser. No. 412,532, Nov. 3, 1973,
abandoned.

[52] U.S. Cl. 198/19; 72/184;
83/295; 198/40; 214/1 BB; 219/125 R;

[S1] Int Cl^E 318/39, 408/32 B230 7/03
122412 40 532205

[58] Field of Search 198/19, 40; 83/295;
72/31, 184; 214/1 PE, 1 CM, 1 BB, 1 BT;
408/32; 318/39; 219/79, 80, 124, 125 R

[56] References Cited

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[View Details](#)

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3,483,700	6/1974	Hartung et al.	218/59

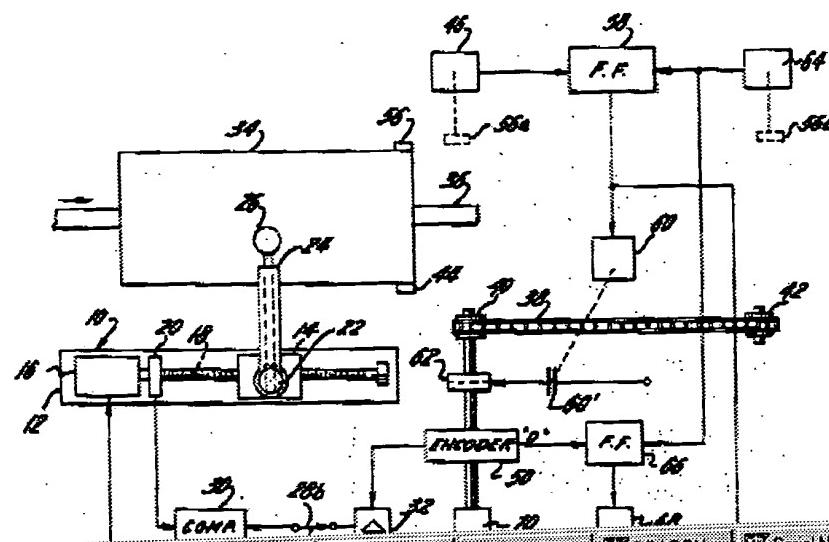
Primary Examiner—Evan C. Blumk

Assistant Examiner—Joseph E. Valente

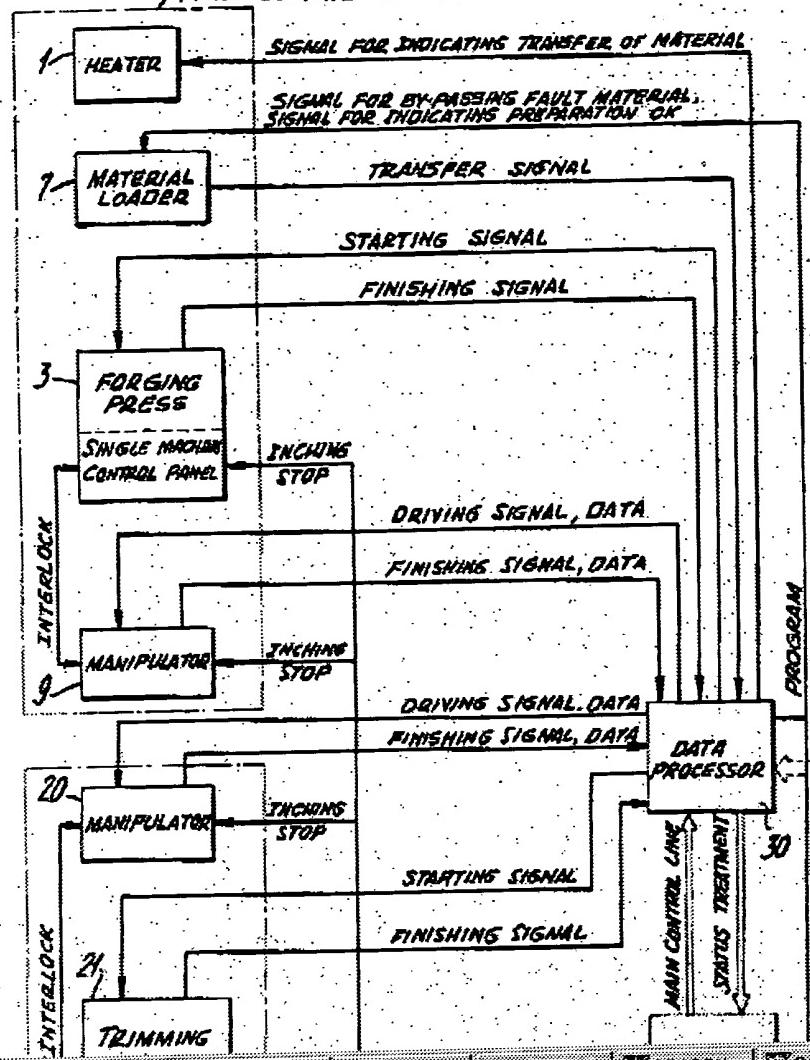
ABSTRACT

An endless chain is caused to become locked to and driven by a work-carrier forming part of a conveyor. The chain drives a signal generator whose output represents the advance of the work-carrier past a robot and the generated signal is combined with program control signals of the robot to modify the operation of the robot so that the robot can operate on a moving work-piece whereas the robot's program alone would cause robot operations on a work-piece that remains

18 Cities, 8 Drawing Flows



FIRST CONTROL SYSTEM



Document	Issue	Patent	Title	Current	Current	Inventor	Link
1	US 6073551	2000068	Press having a transfer device for workpiece	100/20	198/621	Dangelmayr	<input type="checkbox"/>
2	US 5737960	19980411	Press with a combination transfer system	72/405	72/405.	Brandstett	<input type="checkbox"/>
3	US 5582063	1996128	Multistand press or similar press facility	72/455	72/405.	Hofele, Ha	<input type="checkbox"/>
4	US 5359872	19941130	Method and apparatus for sheet-metal processing	72/16.	219/121	Nashiki, M	<input type="checkbox"/>
5	US 5271140	19931241	Index-feed machining system	29/33K	29/33Q	Futamura,	<input type="checkbox"/>
6	US 4932116	19900615	Machine for producing friction bearing parts	29/564	29/558	Aubele, Ed	<input type="checkbox"/>
7	US 4672729	19870610	Method for machining clutch gear for automotive	29/893	72/332	Hoguchi, T	<input type="checkbox"/>
8	US 4554814	19851115	Air transfer system and method for a sheet metal	70/345	72/349	Grow, Arth	<input type="checkbox"/>
9	US 4463587	19840829	Article handling assembly for forging press	72/4	198/495	Werner, Eb	<input type="checkbox"/>
10	US 4247033	19810111	Method of and device for producing multi-layer	228/10	219/62	Dahmen, Ka	<input type="checkbox"/>
11	US 3858422	19750117	JET MOLDING DEVICE	72/56	425/522	Tominaga,	<input type="checkbox"/>
12	US 3837205	19740915	PROCESS FOR COLD FORMING A METAL TUBE WITH A PLATE	72/260	72/370.	Simon, Jos	<input checked="" type="checkbox"/>
13	US 5363683	19941117	Forming machine	72/405		Thudium, K	<input checked="" type="checkbox"/>
14	US 4934035	19900615	Method for producing friction bearing parts	29/898	29/898.	Aubele, Ed	<input checked="" type="checkbox"/>

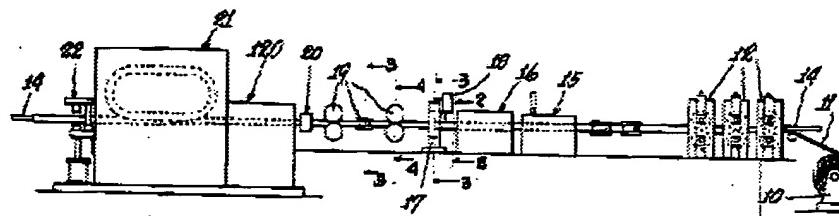
[21] Appl. No.	Thomas G. Wolfe, Kana, both et al., Pa.	1,810,112	6/1931	Riemenschneider	29/477.7 X
[22] Filed	784,784	2,017,360	10/1935	Waterman	29/480 X
[45] Patented	Dec. 18, 1958	2,934,981	5/1960	Persson	29/483 X
[73] Assignee	July 6, 1971	3,263,033	7/1966	Rudd	219/59
	Ernest N. Calhoun Pittsburgh, Pa.	3,392,565	7/1968	Rodder	72/201

Primary Examiner—Richard J. Herbst
Attorney—Williams and Kreake

(34) APPARATUS FOR MAKING TUBING
8 Claims, 16 Drawing Figs.

(52) U.S. Cl.	72/209,
	72/283, 72/370, 29/477.7, 219/59
(51) Int. Cl.	B21b 17/10
(50) Field of Search	219/59; 228/18, 47, 56.3; 72/181, 283, 370, 208, 209, 29/477.7
(56) References Cited	
UNITED STATES PATENTS	
1,120,209 12/1914 Lloyd	219/59

ABSTRACT: A tube mill wherin strip is formed to tube shape and welded along a longitudinal split. The tubing is cold-worked at several passes in a manner that the coarse grain structure at the weld area is refined without affecting the surfaces of reducing dies. Means are provided to effect reciprocation of the mandrel during cold-working operations. The invention comprises methods of forming and working tubing and includes the forming of a tube from strip having thickened longitudinal portions and cold-working the welded area to refine the weld structure approximately to that of the remaining tube.



	Document	Issue	Pa	Title	Current	Current	Inventor	
1	US 6037575	20000348		Method and apparatus for removing a defe	219/60	72/203	Isoyama, S	<input checked="" type="checkbox"/>
2	US 4583675	1986045		Method of production of a part formed wi	228/15	219/91.	Ochiai, Iz	<input checked="" type="checkbox"/>
3	US 4310740	1982016		Process for producing large-sized rectan	219/61	219/59.	Nakazima,	<input checked="" type="checkbox"/>
4	US 3958682	1976058		Coordination of robot and conveyor	198/34	219/125	Martin, Pa	<input checked="" type="checkbox"/>
5	US 3831425	1974087		FULLY AUTOMATIC FORGING PRESS	72/405	219/602	Kita, Masa	<input checked="" type="checkbox"/>
6	US 3718803	19730213		APPARATUS AND METHOD FOR FABRICATING A C	219/15	219/161	Evans, Wil	<input checked="" type="checkbox"/>
7	US 3590622	1971077		APPARATUS FOR MAKING TUBING	72/209	219/61.	Elge, Fran	<input checked="" type="checkbox"/>
8	US 6097012	20000811		Induction-heating bender	219/60	219/635	Shiozuka,	<input type="checkbox"/>
9	US 6008481	19991224		Method and apparatus for deciding heated	219/64	148/688	Mizoue, Ki	<input type="checkbox"/>
10	US 6002118	19991258		Automatic plate bending system using hig	219/60	72/342.	Kawano, Ta	<input type="checkbox"/>
11	US 5990464	19991115		Method for producing hot rolled steel sh	219/60	219/645	Hino, Yosh	<input type="checkbox"/>
12	US 5981921	19991120		Method of magnetic pulse welding an end	219/60	219/611	Yablochnik	<input type="checkbox"/>
13	US 5973292	1999105		Flared nozzle for welding gun and device	219/13	219/136	Igl, Adria	<input type="checkbox"/>
14	US 5966975	1999105		Method and device for zinc plating a spa	72/46	219/69.	Lacourcell	<input type="checkbox"/>
15	US 5951903	19990994		Method and apparatus for joining metal p	219/60	219/617	Isoyama, S	<input type="checkbox"/>
16	US 5948293	19990916		Laser shock peening quality assurance by	219/12	72/53	Somers, Ra	<input type="checkbox"/>
17	US 5927129	1999074		Apparatus and process for making cut ext	72/268	219/121	Thoms, Vol	<input type="checkbox"/>
18	US 5929765	19990712		Method and apparatus for positioning and	340/67	219/121	Urech, Wer	<input type="checkbox"/>
19	US 5918501	19990715		Sheet metal drawing tool and method for	72/479	219/86.	Sunaga, Hi	<input type="checkbox"/>
20	US 5910185	19990611		Device for the guidance of hot-rolled st	72/202	219/653	Figge, Die	<input type="checkbox"/>
21	US 5906759	19990537		Stent forming apparatus with stent defor	219/12	219/121	Richter, J	<input type="checkbox"/>
22	US 5872348	19990210		Method for forming a projection for proj	219/93	219/117	Watanabe,	<input type="checkbox"/>
23	US 5824998	19981016		Joining or welding of metal objects by a	219/61	219/603	Livshiz, Y	<input type="checkbox"/>
24	US 5753894	19980549		Hot rolling method for continuously join	219/60	219/603	Isoyama, S	<input type="checkbox"/>
25	US 5744773	19980413		Resistance heating process and apparatus	219/50	219/156	Van Ottere	<input type="checkbox"/>
26	US 5737957	19980417		Apparatus for straightening a cylindrica	72/342	219/121	Gray, Stan	<input type="checkbox"/>

United States Patent [S]
Papazian et al.

US5271140A
Patent Number 5,271,140
Date of Patent Dec. 21, 1993

[D] INDEP-PIED MACHINING SYSTEM
[T] Inventor: Shoji Furukawa, Kenzoji, Kosei, Japan; Yoichiro, both of Japan
[T] Assignee: Institute of Technology Precision
Electrical Engineering Works, Kusatsu, Kyoto, Japan

[D] Appl. No. 07/621

[D] Filed May 5, 1991

[D] Foreign Application Priority Data

May 11, 1990 [JP] Japan 1-12719

May 11, 1990 [JP] Japan 1-12720

May 11, 1990 [JP] Japan 1-12721

May 11, 1990 [JP] Japan 1-12722

[D] Int'l Cl.
H01L 1/18 R&P 1/04

U.S. Cl.
399/15; 399/16; 399/17; 399/18;

399/19; 399/20; 399/21; 399/22; 399/23;

399/24; 442/445; 442/446; 442/447; 442/448

[D] Field of Search
29/11 E, 11 R, 11 S,
29/164.1, 244.2, 771, 774, 782, 784, 786,

72/204, 442, 445, 446, 447, 448, 222, 223

[D] Reference Cited

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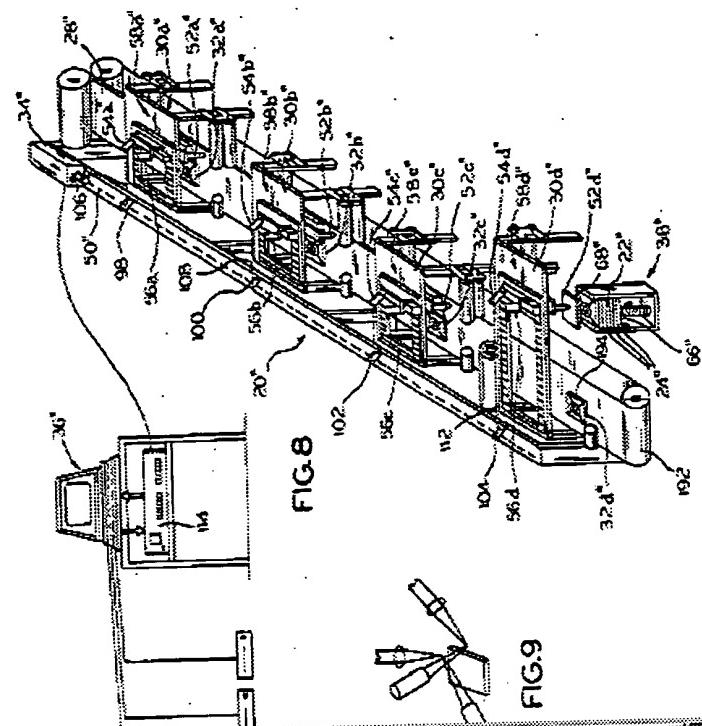
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Document	I	S	Issue	Pa	Title	Current	0	Current	Inventor
1			EP 639425	D	199703 5 Laser welding component in metal plate hole - using p				GUMBERT, H
2			EP 593894	D	199807 11 Punching press with laser welding system - has positi				HELLWIG, U
3			EP 343661	D	199803 7 Welded stacks of punchings - made by applying laser b				HELLWIG, U

Document	S	Issue	Pg	Title	Current	0	Current	Inventor
1	US 5210910	E	199305	8 Bundling strap employing flat blank with one end havi				HELLWIG, J
2	US 4146848	E	197903	TITLE DATA NOT AVAILABLE				HELLWIG, H
3	US 3693006	E	197209	MOLECULAR FREQUENCY STANDARD				HELLWIG, H
4	US 3668293	E	197206	MOLECULAR FREQUENCY STANDARD				HELLWIG, H
5	EP 1037229	D	200009	Switch for motor vehicle lift-and-slide roof has oper				GEPPERT, H
6	CH 687009	D	199608	Welding coated stamped sections - uses a laser beam p				HELLWIG, U
7	CH 685108	D	199503	Reshaping articles, esp. complicated models and proto				HELLWIG, U
8	EP 593894	D	199807	11 Punching press with laser welding system - has positi				HELLWIG, J
9	US 5210910	D	199305	Bundling strap for newspapers - has flat blank with o				HELLWIG, U
10	WO 9305465	D	199303	Band gap circuit for use as voltage reference circuit				HELLWIG, U
11	EP 343661	D	199803	7 Welded stalls of punchings - made by applying laser b				HELLWIG, U
12	EP 300000	D	198808	11 High frequency stamping press operating drive - uses				HELLWIG, F
13	DE 2939461	D	198104	Error checking of read-write data in NC systems - com				HELLWIG, F
14	DE 2913999	D	198010	System programs testing for numerically controlled ma				HELLWIG, F
15	DE 2844795	D	198004	Double cable operated power grab - has conical jaw ca				HELLWIG, U
16	DE 2745101	D	197904	Gas discharge signalling device - has UV radiation em				HELLWIG, U
17	US 4146848	D	197903	Frequency stabilising system for beam-type device - i				HELLWIG, H